



ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Integral Consulting Inc.
Suite 190
285 Century Place
Louisville CO 80027

Report Date: August 07, 2018 16:04

Project: Solvay

Account #: 20003
Group Number: 1971898
State of Sample Origin: NJ

Electronic Copy To Integral Consulting Inc.
Electronic Copy To Integral Consulting Inc.
Electronic Copy To Solvay
Electronic Copy To Solvay

Attn: Craig Hutchings
Attn: Erin Palko
Attn: Mark Christensen
Attn: Mitch Gertz

Respectfully Submitted,



Lyssa M. Longenecker
Specialist

(717) 556-7321

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SAMPLE INFORMATION

Client Sample Description

V915 Grab Water
Field Blank Grab Water

Sample Collection

Date/Time

07/24/2018 09:00
07/24/2018 09:00

ELLE#

9732092
9732093

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: V915 Grab Water

Project Name: Solvay

Integral Consulting Inc.

ELLE Sample #: WW 9732092

ELLE Group #: 1971898

Matrix: Water

Submittal Date/Time: 08/01/2018 10:00

Collection Date/Time: 07/24/2018 09:00

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous		EPA 537 Version 1.1 Modified	ng/l	ng/l	ng/l	
14473	Perfluorobutanesulfonate	375-73-5	N.D.	0.25	0.85	1
14473	Perfluorodecanoic acid	335-76-2	13	0.76	1.7	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.42	1.7	1
14473	Perfluoroheptanoic acid	375-85-9	23	0.34	0.85	1
14473	Perfluorohexanesulfonate	355-46-4	1.2 J	0.34	1.7	1
14473	Perfluorohexanoic acid	307-24-4	15	0.34	1.7	1
14473	Perfluorononanoic acid	375-95-1	2,100	3.4	17	10
14473	Perfluoro-octanesulfonate	1763-23-1	9.2	0.34	1.7	1
14473	Perfluorooctanoic acid	335-67-1	250	0.25	0.85	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.25	0.85	1
14473	Perfluorotridecanoic acid	72629-94-8	0.53 J	0.34	0.85	1
14473	Perfluoroundecanoic acid	2058-94-8	45	0.34	1.7	1

The recovery for labeled compound used as extraction standards is outside of QC acceptance limits as noted on the QC Summary due to the matrix of the sample.

Sample Comments

State of New Jersey Lab Certification No. PA011

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	18214003	08/02/2018 22:05	Devon M Whooley	1
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	18214003	08/05/2018 17:06	Jason W Knight	10
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	18214003	08/02/2018 08:20	Courtney J Fatta	1

*=This limit was used in the evaluation of the final result

Sample Description: Field Blank Grab Water

Project Name: Solvay

Integral Consulting Inc.

ELLE Sample #: WW 9732093

ELLE Group #: 1971898

Matrix: Water

Submittal Date/Time: 08/01/2018 10:00

Collection Date/Time: 07/24/2018 09:00

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous		EPA 537 Version 1.1 Modified	ng/l	ng/l	ng/l	
14473	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	0.91	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.82	1.8	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.46	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	0.91	1
14473	Perfluorohexanesulfonate	355-46-4	N.D.	0.36	1.8	1
14473	Perfluorohexanoic acid	307-24-4	N.D.	0.36	1.8	1
14473	Perfluorononanoic acid	375-95-1	0.80 J	0.36	1.8	1
14473	Perfluoro-octanesulfonate	1763-23-1	1.1 J	0.36	1.8	1
14473	Perfluorooctanoic acid	335-67-1	0.96	0.27	0.91	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.27	0.91	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.36	0.91	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.36	1.8	1

Sample Comments

State of New Jersey Lab Certification No. PA011

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	18214003	08/02/2018 22:14	Devon M Whooley	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	18214003	08/02/2018 08:20	Courtney J Fatta	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Integral Consulting Inc.
Reported: 08/07/2018 16:04

Group Number: 1971898

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result ng/l	MDL** ng/l	LOQ ng/l
Batch number: 18214003	Sample number(s): 9732092-9732093		
Perfluorobutanesulfonate	N.D.	0.30	1.0
Perfluorodecanoic acid	N.D.	0.90	2.0
Perfluorododecanoic acid	N.D.	0.50	2.0
Perfluoroheptanoic acid	N.D.	0.40	1.0
Perfluorohexanesulfonate	N.D.	0.40	2.0
Perfluorohexanoic acid	N.D.	0.40	2.0
Perfluorononanoic acid	N.D.	0.40	2.0
Perfluoro-octanesulfonate	N.D.	0.40	2.0
Perfluorooctanoic acid	N.D.	0.30	1.0
Perfluorotetradecanoic acid	N.D.	0.30	1.0
Perfluorotridecanoic acid	N.D.	0.40	1.0
Perfluoroundecanoic acid	N.D.	0.40	2.0

LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 18214003	Sample number(s): 9732092-9732093								
Perfluorobutanesulfonate	4.81	4.23	4.81	4.41	88	92	73-128	4	30
Perfluorodecanoic acid	5.44	5.12	5.44	4.69	94	86	69-148	9	30
Perfluorododecanoic acid	5.44	5.68	5.44	5.15	104	95	75-136	10	30
Perfluoroheptanoic acid	5.44	5.21	5.44	5.31	96	98	76-140	2	30
Perfluorohexanesulfonate	5.14	5.23	5.14	4.86	102	94	71-131	7	30
Perfluorohexanoic acid	5.44	5.09	5.44	4.88	94	90	75-135	4	30
Perfluorononanoic acid	5.44	5.03	5.44	5.79	92	106	72-148	14	30
Perfluoro-octanesulfonate	5.20	5.15	5.20	6.26	99	120	67-138	19	30
Perfluorooctanoic acid	5.44	6.08	5.44	7.49	112	138	72-138	21	30
Perfluorotetradecanoic acid	5.44	5.41	5.44	5.25	100	97	74-135	3	30
Perfluorotridecanoic acid	5.44	5.71	5.44	5.63	105	103	61-145	1	30
Perfluoroundecanoic acid	5.44	5.62	5.44	4.90	103	90	75-146	14	30

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Integral Consulting Inc.
Reported: 08/07/2018 16:04

Group Number: 1971898

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: PFAS in Water by LC/MS/MS

Batch number: 18214003

	13C3-PFBS	13C5-PFHxA	13C3-PFHxS	13C4-PFHpA	13C8-PFOA	13C8-PFOS
9732092	157*	104	115	117	98	102
9732093	89	104	92	98	97	101
Blank	93	88	83	93	94	90
LCS	90	84	75	84	83	85
LCSD	91	85	72	84	83	77
Limits:	26-148	31-128	34-126	35-126	43-112	43-115
	13C9-PFNA	13C6-PFDA	13C7-PFUnDA	13C2-PFDoDA	13C2-PFTeDA	
9732092	87	96	93	88	106	
9732093	107	102	102	97	96	
Blank	107	93	101	96	91	
LCS	93	86	78	76	78	
LCSD	89	88	87	82	82	
Limits:	32-134	40-115	30-128	28-127	26-119	

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.



For Eurofins Lancaster Laboratories Environmental use only

For Euronis Lancaster Laboratories Environmental use only

Acct. # 20003 Group # 1971898 Sample # 9732092-93

COC # 556285

Eurofins Lancaster Laboratories Environmental, LLC • 2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

Client: Solvay**Delivery and Receipt Information**

Delivery Method: Fed Ex Arrival Timestamp: 08/01/2018 10:00
 Number of Packages: 1 Number of Projects: 1
 State/Province of Origin: NJ

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace \geq 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	1
Paperwork Enclosed:	Yes	Trip Blank Type:	See Below
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Trip Blank Type(s): Unpreserved

Unpacked by Conrad Burkholder (12671) at 13:31 on 08/01/2018

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?	Samples Collected Same Day as Receipt?
1	DT42-01	7.0	DT	Wet	N	Loose	Y	N

Elevated Temperature Details

All Temperatures in °C

Cooler #	Thermometer ID	Top Left Temp	Top Right Temp	Bottom Left Temp	Bottom Right Temp	Center Temp	Factors Contributing to Elevated Temp	Comments
1	32170023	8.0	8.6			7.0		

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
C	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
CP Units	cobalt-chloroplatinate units	ng	nanogram(s)
F	degrees Fahrenheit	NTU	nephelometric turbidity units
g	gram(s)	pg/L	picogram/liter
IU	International Units	RL	Reporting Limit
kg	kilogram(s)	TNTC	Too Numerous To Count
L	liter(s)	µg	microgram(s)
lb.	pound(s)	µL	microliter(s)
m3	cubic meter(s)	umhos/cm	micromhos/cm
meq	milliequivalents	MCL	Maximum Contamination Limit
mg	milligram(s)		
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.